

1. A combined in-circuit emulation system and programmer, comprising:
 - a pod carrying an emulation microcontroller and a socket for programming another microcontroller;
 - a base station having virtual microcontroller that operates in lock-step synchronization with the emulation microcontroller during emulation operations;
 - an interface connecting the pod to the base station, the interface having a clock signal line, a pair of data signal lines, a reset line and a power line, wherein the reset line is connected to the emulation microcontroller, but is not connected to the socket; and
 - wherein the emulation microcontroller can be placed in a sleep mode so that a microcontroller residing in the socket can be programmed by receiving programming information from the base station without the programming being disturbed by actions of the emulation microcontroller.
2. The apparatus according to claim 1, wherein the programming instructions are sent to the microcontroller residing in the socket using one of the data lines for clock and another of the data lines for the programming instructions.
3. The apparatus according to claim 1, wherein the data lines are used for carrying out communications between the microcontroller and the virtual microcontroller during emulation operations.
4. The apparatus according to claim 1, wherein the interface is used for communication between the virtual microcontroller and the emulation microcontroller during emulation operations; and wherein the interface is used for programming the microcontroller in the socket during programming operations.
5. The apparatus according to claim 1, wherein the data lines are connected to terminals of the socket corresponding to programming inputs for the microcontroller residing in the socket.

1 7. A pod assembly for use with a combined In-Circuit Emulation system and
2 device programmer, comprising:

3 a device under test;
4 a programming socket for carrying a device to be programmed;
5 an interface connecting data lines to programming inputs of the device to be
6 programmed and to the device under test; and

7 wherein the data lines carry programming instructions to the device to be
8 programmed during a programming operation, and wherein the data lines are used
9 for communication with the device under test during emulation operations.

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11 8. The apparatus according to claim 7, wherein the interface further comprises
12 a reset line connected to the device under test but not connected to the
13 programming socket.

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15 9. The apparatus according to claim 7, wherein the interface is carried over a
16 category 5 cable.

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18 10. The apparatus according to claim 7, wherein the interface further comprises
19 a clock signal line connected to the device under test, a pair of data signal lines
20 connected both to the socket and the device under test, a reset line and a power
21 line; and

22 wherein the reset line is connected to the device under test, but is not
23 connected to the socket.

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25 11. The apparatus according to claim 10, wherein the data lines carry both
26 instructions and clock information during the programming operation.

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28 12. The apparatus according to claim 1, wherein the device under test
29 comprises a microcontroller.

1 13. A method of programming a programmable device, the device residing in a
2 socket of a pod that carries an emulation device used in emulation operations,
3 comprising:

4 applying power to the pod;
5 sending a control signal to the pod to place the emulation device into a
6 sleeping state; and

7 programming the programmable device residing in the socket while the
8 emulation device is in the sleeping state.

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10 14. The method according to claim 13, wherein the sending comprises:
11 sending a reset signal to the emulation device;
12 applying a predetermined logic state to a data line;
13 holding the logic state on the data line while the reset signal is released as
14 an instruction to place the emulation device in a sleeping state.

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16 15. The method according to claim 13, wherein the programming comprises
17 sending a key code to the programmable device within a prescribed period of time
18 after applying the power.

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20 16. The method according to claim 13, wherein sending the key code comprises
21 sending the key code over a first data line and clocking the key code into the
22 programmable device using a second data line to carry a clock signal.

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24 17. The method according to claim 16, wherein the first and second data lines
25 are used to carry data from the emulation device when the emulation device is
26 operating in an emulation mode.

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28 18. The method according to claim 13, wherein the programming further
29 comprises sending program code over a first data line and clocking the program
30 code into the programmable device using a second data line to carry a clock signal.

19. The method according to claim 18, wherein the first and second data lines are used to carry data from the emulation device when the emulation device is operating in an emulation mode.

20. The method according to claim 14, wherein the power, data and reset lines are carried over an interface using a category 5 cable.

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